Prosody of Iterative Infixal Ludlings in Turkish

SUZUKI, Yui
Graduate Student, The University of Tokyo

Turkish has many types of Iterative Infixal Ludlings (IILs), where a specific sequence is inserted iteratively into a word (e.g., *merhaba* > (*me**ger***)(*ha**ga***)(*ba**ga***) 'hello'). Importantly, they are known for showing different foot patterns in different languages. This paper investigates the prosody of a specific type of Turkish IIL, the *-gV* ludling, in which a sequence *-gV* is inserted after every vowel. The main findings of this study are as follows. First, a falling contour is assigned to source syllables, and a rising contour to inserted syllables. Second, the vowel of a source syllable is shorter than the vowel of an inserted *-gV* sequence. Lastly, from these observations, I conclude that the *-gV* ludling forms iambic feet. This conclusion provides strong support for the existence of iambic feet in Turkish. Thus, investigating ludlings provides new phonological evidence which would not be observed in natural languages.

Keywords: ludlings, iterative infixal ludlings, iambic foot, pitch accent, Turkish

1. Introduction*

Turkish has various kinds of ludlings. Ludlings refer to language games, where phonological forms in natural languages are systematically transformed in order to conceal the real form or make for comic effect. They have received much attention in the literature on phonology (Laycock 1972; Davis 1993; Vaux 2011). Especially, Turkish is abundant in Iterative Infixal Ludlings (IILs). IILs are ludlings where a specific sequence is inserted iteratively into a word (Yu 2008). An example of Turkish IILs is provided in (1).

* Part of an earlier version of this paper was presented at the Field Linguistics Workshop: Grammatical Studies Workshops 17: "Language games and phonology (2)" at the Research Institute for Languages and Cultures of Asia and Africa in January 2020. I am thankful to the two reviewers for their valuable comments and criticisms, which have helped me improve the manuscript. I would also like to thank my Turkish consultants for sharing their knowledge with me: Cem Güzelbulut and Zeynep Eda Yakar. Any remaining errors are my responsibility.

Asian and African Languages and Linguistics 15 (2021), pp.31–46. https://doi.org/10.15026/99895.

(1) *merhaba* > *me**ge**rha**ga**ba**ga*** 'hello'

In (1), a *-gV* sequence is inserted after every vowel. In this paper, I refer to this ludling as the *-gV* ludling. Interestingly, IILs in many languages show foot patterns i.e., a rhythmic alternation of stressed and unstressed syllables, and the patterns are different from language to language (Yu 2008).

The *-gV* ludling is important in Turkish phonology because it can provide evidence for foot structure in Turkish. There are two competing views on feet in Turkish. On the one hand, a trochaic foot analysis is proposed by Inkelas (1999) and Charette (2008) in their discussion of the final prominence of the word. Another trochaic foot analysis is suggested by Özçelik (2014) to account for the lexical accent of the word. On the other hand, an iambic foot analysis is advanced by Barker (1989) in his discussion of the lexical accent. Thus, examining the prosody of the *-gV* ludling will enable us to get a better understanding of Turkish feet.

This paper investigates the prosody of the *-gV* ludling and argues for the existence of iambic feet in Turkish. There are three main findings in this paper. First, a falling contour is assigned to source syllables, and a rising contour to inserted syllables. Second, the vowel of a source syllable is shorter than the vowel of an inserted *-gV*. Lastly, from these two observations, I conclude that the *-gV* ludling forms iambic feet.

This conclusion provides strong support for the existence of iambic feet in Turkish. This evidence is obtained not by investigating natural languages but only by investigating ludlings. This study suggests the possibility that ludlings can provide new evidence for natural language phenomena.

This paper is organized as follows: Section 2 presents a background of Turkish phonology. Section 3 outlines ludlings in Turkish. Section 4 looks into the data of the *-gV* ludlings in terms of pitch and duration. Section 5 argues that the *-gV* ludling forms iambic feet based on the data provided in the previous section. Section 6 concludes the paper.

2. Background of Turkish phonology

Before I investigate ludlings in Turkish, this section presents a background of Turkish phonology. Specifically, I introduce the accent system (Section 2.1) and the structures of syllables and feet in Turkish (Section 2.2).

2.1. Accent system in Turkish

This section presents an overview of the Turkish accent system. This paper assumes that Turkish is a pitch-accent language following Underhill (1976), Underhill (1986), Levi (2005), and Özçelik (2014). According to Beckman (1986), F_0 can be used to mark the accented syllable in pitch-accent languages. Levi (2005) points out that, in Turkish, F_0 is

the most dramatic cue to accent location, and that duration and intensity are less reliable than F_0. Accordingly, I examine the F_0 track to determine accent patterns in the rest of this paper.[1]

Turkish words are divided into two classes with regard to accent: unaccented words and lexically accented words (Özçelik 2014). Unaccented words do not have any accent but a boundary tone (H%) in the last syllable (Özçelik 2014). This boundary tone is assigned to the final syllable even when the word gets longer through affixation. See (2)–(5). H and L here represent the F_0 pattern of each syllable.

(2) *elma*
LH%
'apple'

(3) *elma-lar*
LLH%
apple-PL
'apples'

(4) *elma-lar-ım*
LLLH%
apple-PL-1SG
'my apples'

(5) *elma-lar-ım-dan*
LLLLH%
apple-PL-1SG-ABL
'from my apples'

Whereas unaccented words have prominence given to the final syllable, lexically accented words have prominence given to a syllable other than the final one. Levi (2005) points out that the lexically accented words show a rise in the accented syllable and a drop in the following syllable, that is, falling contour (H*L). See (6)–(8).

(6) *reçete*
LH*L
'prescription'

[1] There is a view of Turkish as a stress-accent language (Lees 1997; Sezer 1981; Inkelas 1999; Kavak and Vogel 2001; Inkelas and Orgun 2003).

(7) *lokanta*
LH*L
'restaurant'

(8) *tencere*
H*LL
'saucepan'

Lexically accented stems do not lose their accent even when the word gets longer through affixation. They basically do not have a boundary tone in the final syllable. See (9) and (10).

(9) *reçete-ler*
LH*LL
prescription-PL
'prescriptions'

(10) *reçete-ler-im*
LH*LLL
prescription-PL-1SG
'my prescriptions'

The stem *reçete* 'prescription' has a lexical accent as seen in (6). This accent remains in the same syllable position, as in (9) and (10).

In compound words, the falling contour (H*L) is assigned to the final syllable of the first element. The second element does not bear any prominence. See (11) and (12).

(11) *baş bakan*
H*LL
head minister
'president'

(12) *kara deniz*
LH*LL
black sea
'Black Sea'

To sum up, Turkish has two types of words regarding accent: unaccented words associated with a boundary tone (H%) in the final syllable and lexically accented words

associated with a falling contour (H*L) in the non-final syllable. Words of the first type have prominence in the final syllable of the word even when the word is lengthened through affixation. Words of the second type keep their accent even when they get longer. Compound words have the falling contour (H*L) in the final syllable of the first element.

2.2. Syllables and feet in Turkish

The basic syllable structure of native words in Turkish is (C)V(C)(C) (Table 1). A word is divided into syllables in the following ways: a single consonant between vowels is assigned to the following syllable; two consonants between vowels are split between the two syllables; three consonants are assigned two to the first syllable, one to the second (Comrie 1997: 890). A vowel-initial syllable occurs only in the beginning of the word.

Table 1 Basic syllable structure in Turkish

Syllable structure	Examples
V	*o* 'that'
VC	*ön* 'front'
VCC	*alt* 'bottom'
CV	*su* 'water'
CVC	*var* 'exist'
CVCC	*dört* 'four'

Next, let me introduce the foot structure in Turkish. There are two competing accounts for the Turkish accent in terms of feet. On the one hand, a trochaic foot analysis is proposed by Inkelas (1999) and Charette (2008) in their discussion of the final prominence of the word. The trochaic foot analysis is also suggested by Özçelik (2014) to account for the lexical accent of the word. On the other hand, an iambic foot analysis is advanced by Barker (1989) in his discussion of the lexical accent.

3. Ludlings in Turkish

Before analyzing the prosody of ludlings, I provide an overview of the sociolinguistic background (Section 3.1) and variations of ludlings in Turkish (Section 3.2).

3.1. Sociolinguistic background of ludlings in Turkish

Ludlings in Turkish are called *kuş dili* 'bird language' or *gizli dil* 'secret language'. They are used mainly by children as play (Şahin 2008: 10). By using ludlings, children can understand each other secretly and make a distinction between those who know *kuş dili* and those who do not (Şahin 2008: 11). In particular, street children use ludlings for truly secret mutual understanding (Şahin 2008: 11). They use ludlings to prevent others from understanding what they are talking about.

It is not only children who use ludlings. Some parents talk about private things using ludlings in front of their children. They also use ludlings with their children for enjoyment (Şahin 2008: 11).

3.2. Variations of ludlings in Turkish

Turkish has various kinds of ludlings (Şahin 2008: 12–15). In particular, it has many kinds of iterative infixal ludlings (IILs): there is a variation in what is inserted and where it is inserted. Let us illustrate such a variation of IILs with four representative examples. In the first type, a sequence is inserted after every vowel in a word. The sequences used in this game include *-gV*, *-cV*, *-fV*, *-vV*, *-bV*, *-yV*, *-pç*, *-skV*, *-srV*, *-stV*, and *-htVbVtV*. *V* of the inserted sequence represents the same vowel of the source syllable. The sentence in (13) is transformed into the *-gV* and *-htVbVtV* ludlings, as in (14) and (15), respectively. Note that the inserted sequences are indicated in boldface.

(13) *Ben sen-i sev-iyor-um.*
1SG 2SG-ACC like-PROG-1SG
'I like you.'

(14) *Be**ge**n se**ge**ni**gi** se**ge**vi**gi**yo**go**ru**gu**m.* (Şahin 2008: 12)

(15) *Be**htebete**n se**htebete**ni**htibiti** se**htebete**vi**htibiti**yo**htobotoru**htubutu**m.*
(Şahin 2008: 13)

In the second type of IIL, a sequence is inserted after every segment in a word. When the segment is a consonant, the sequence *-ebir* is inserted. When the segment is a consonant, the sequence *-bir* is inserted. See (16).

(16) ***Bebirebirnebir sebirebirnebiribir sebirebirvebiribiryebirobirrebirubirmebir***. (*Ben seni seviyorum*) (Şahin 2008: 13)

In the third type of IIL, a sequence is inserted before every syllable in a word. The sequences include *kutu* 'box', *inci* 'pearl', *par*, and *per.* Whereas the former two *kutu* and *inci* are lexical units, the latter two *par* and *per* have no meaning in Turkish. See (17), where the sequence *kutu* is used.

(17) ***Kutu**ben **kutu**se**kutu**ni **kutu**se**kutu**vi**kutu**yor**kut(u)**um.* (*Ben seni seviyorum*)
(Şahin 2008: 13)

In the final type of IIL, the sequence *bayrım* is inserted after every word in a sentence. *Bayrım* has no meaning in Turkish. See (18).

(18) *Ben**bayrım** seni**bayrım** seviyorum**bayrım**.* (*Ben seni seviyorum*) (Şahin 2008: 14)

Turkish has ludlings other than IILs. For example, one kind includes a rearrangement operation. In one-syllable words, the first consonant and the last consonant are exchanged. In words with two or more syllables, the first syllable is moved to the end. See (19), for an example.

(19) *Neb nise viyorumse.* (*Ben seni seviyorum*)

Turkish has another rearrangement type of ludling, where one reads every word backward. See (20).

(20) *Neb ines muroyives*. (*Ben seni seviyorum*) (Şahin 2008: 14)

4. Data

This section examines the prosody of the *-gV* ludling.[2] I examine the prosodic patterns of the *-gV* ludling regarding pitch (Section 4.1) and duration (Section 4.2).

4.1. Pitch patterns in the *-gV* ludling

This section describes the pitch patterns in the *-gV* ludling. To be more specific, I demonstrate that a falling contour is assigned to source syllables, whereas a rising contour is assigned to inserted syllables.

To begin with, let us compare the minimal pair in (21) and (22). This pair is different from each other in pitch pattern. Whereas (21) is an unaccented word with a boundary tone (H%), (22) is a lexically accented word with non-final prominence (H*L).

(21) *sirkeci*
LLH%
'seller of vinegar'

[2] I collected data from two native Turkish speakers (#1: Male, 20s, Kahramanmaraş, #2: Female, 20s, Ankara). I showed them an input word list and had them speak the words in the *-gV* ludling. Note that I indicate the participant number as the source for each figure in this paper, e.g., (#1).

(22) *Sirkeci*
H*LL
'Sirkeci (place noun)'

The *-gV* ludling version of (21) and (22) is represented in (23). Figures 1 and 2 show the F_0 tracks of each word in the *-gV* ludling. The F_0 patterns do not differ from each other very much, although the words in (21) and (22) have different accent patterns. Importantly, a falling pitch is assigned to source syllables, whereas a rising pitch is assigned to inserted syllables.

(23) *sigirkegecigi*
LHLHLH

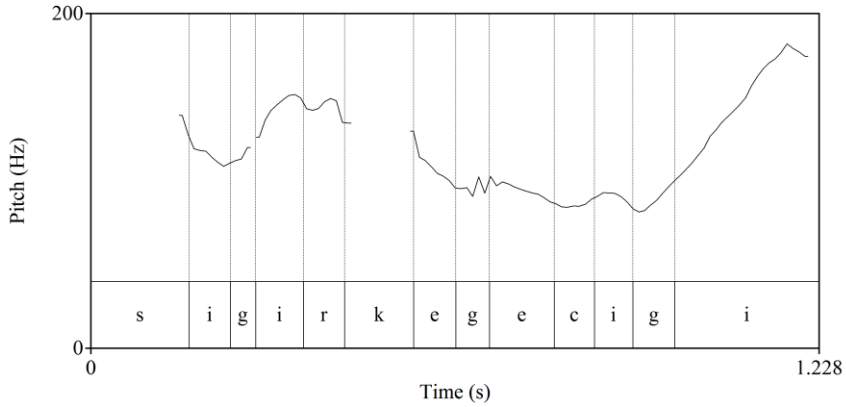

Fig. 1 F_0 track of example (21) in the *-gV* ludling form (#1)

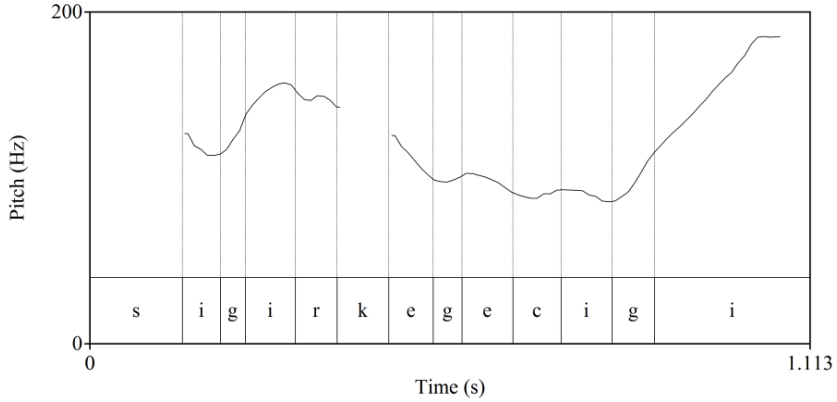

Fig. 2 F_0 track of example (22) in the *-gV* ludling form (#1)

This analysis of the pitch pattern of the *-gV* ludling is further supported by two kinds of verbal repetitive constructions: emphatic and deontic repetitive constructions. These constructions are different from each other in terms of pitch pattern. In the emphatic repetitive construction in (24), the past tense verb is repeated, and the each of the verb has a final prominence H% (Figure 3). The repetition indicates an emphasis on the action expressed by the verb.

(24)	*Ev-im-e*	*gel-di-n*	*gel-di-n*
		LLH%	LLH%
	house-1SG-DAT	come-PST-2SG	come-PST-2SG
	ama	*ben-i*	*bul-a-ma-dı-n.*
	but	1SG-ACC	find-POSS-NEG-PST-2SG
	'You came and came to my house, but you did not find me.'		

In the deontic repetitive construction (25), on the other hand, the first verb has a falling contour (H*L) in the final syllable, like other compound words (Suzuki 2019) (Figure 4). This construction functions to express deontic mood.

(25)	*Ev-im-e*	*gel-di-n*	*gel-di-n*
		LLH*	LLL
	house-1SG-DAT	come-PST-2SG	come-PST-2SG
	yoksa	*yemek*	*kal-ma-yacak.*
	otherwise	meal	remain-NEG-FUT
	'You have to come to my house, or the meal won't remain.'		

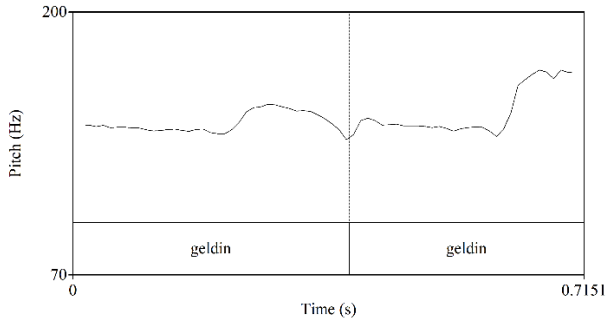

Fig. 3 F_0 track of the emphatic repetitive construction in (24) (#1)

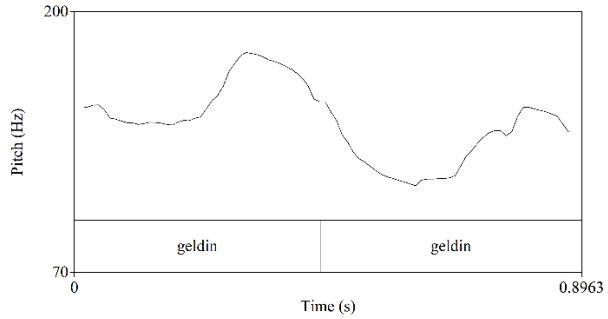

Fig. 4 F_0 track of the deontic repetitive construction in (25) (#1)

The *-gV* ludling version of the emphatic repetitive construction in (24) and the deontic repetitive construction in (25) is shown in (26). Figures 5 and 6 show the F_0 tracks of each word in the *-gV* ludling. Again, the F_0 patterns between them do not differ from each other. Even when the pitch patterns of the input differ from each other, the pitch pattern of the output is the same. In addition, it is also observed that a falling pitch is assigned to source syllables, whereas a rising pitch is assigned to inserted syllables.

(26) *gegeldigin* *gegeldigin*
LHLH% LHLH%

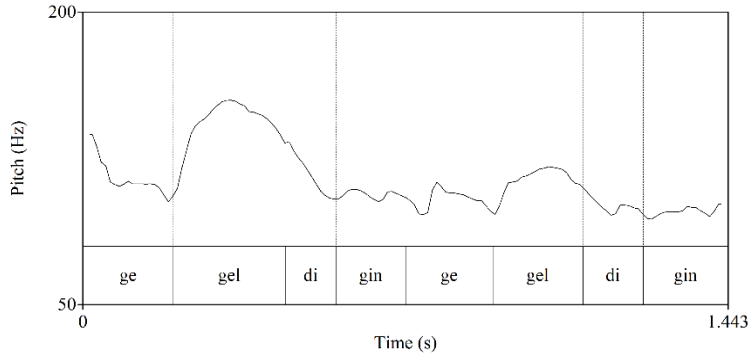

Fig. 5 F_0 track of example (24) in the *-gV* ludling form (#1)

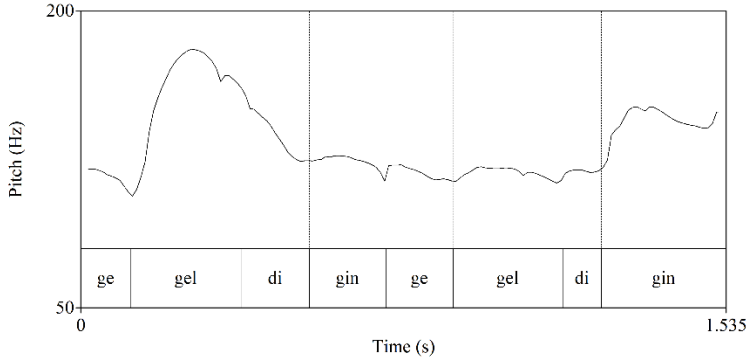

Fig. 6 F_0 track of example (25) in the *-gV* ludling form (#1)

In conclusion, in the *-gV* ludling, different pitch patterns of the input converge on the same pattern: a falling pitch is assigned to source syllables, and a rising pitch is assigned to inserted syllables.

4.2. Duration in *-gV* ludling forms

This section shows that the vowel of a source syllable is shorter than the vowel of an inserted *-gV* syllable. Example (27) shows the input of the word, and (28) shows the *-gV* ludling version of (27). Figure 7 shows the waveform and spectrogram of the *-gV* ludling version in (28).

(27) *elma-lar*
apple-PL
'apples'

(28) *egelmagalagar*

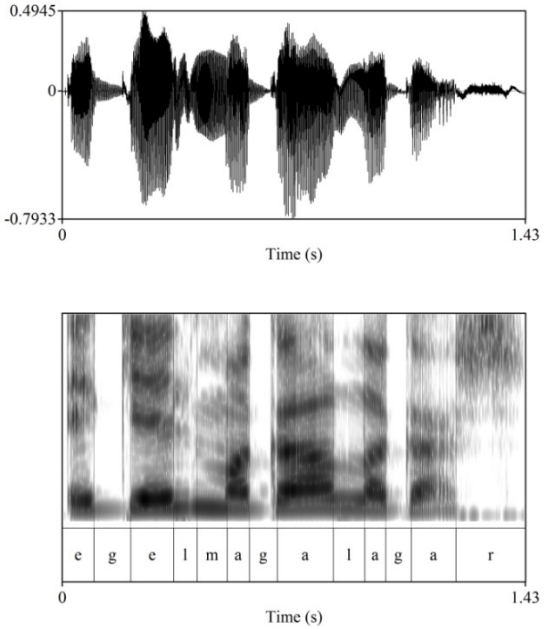

Fig. 7 Waveform and spectrogram of example (28) (#2)

I measured the duration of the vowel in each syllable from Figure 7. See Table 2.

Table 2 Duration of the vowel in each syllable of example (28)

Syllable	source (msec)	*-gV* (msec)
el	86.4	132.3
ma	68.0	172.8
lar	64.3	137.9

As shown in Table 2, the vowels in the *-gV* syllables are longer than those in the source syllables.

In addition, even a long vowel in the source syllable does not get lengthened; instead, the following vowel in the *-gV* sequence gets lengthened. The source words in examples (29) and (31) include long vowels, and (30) and (32) show their *-gV* ludling versions, respectively. Figures 8 and 9 show the waveform and duration of examples (30) and (32), respectively.

(29) a:bi
‘big brother’

(30) aga:bigi

(31) hakika:t
'truth'

(32) hagakigikaga:t

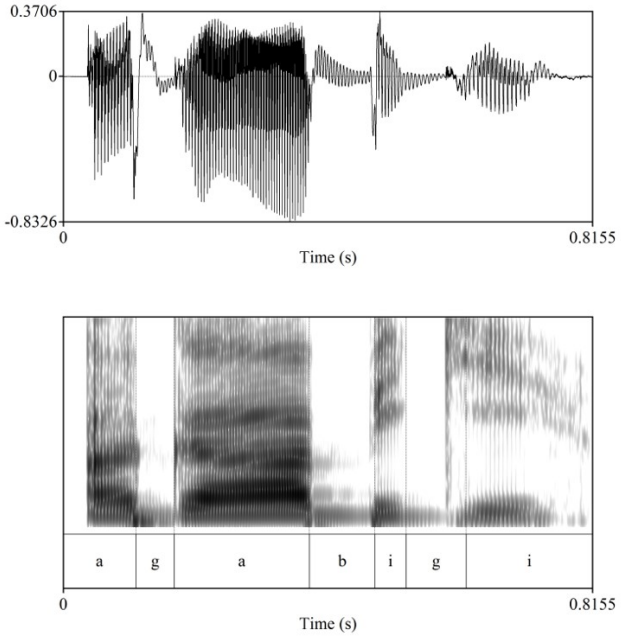

Fig. 8 Waveform and spectrogram of the *-gV* ludling version of example (30) (#2)

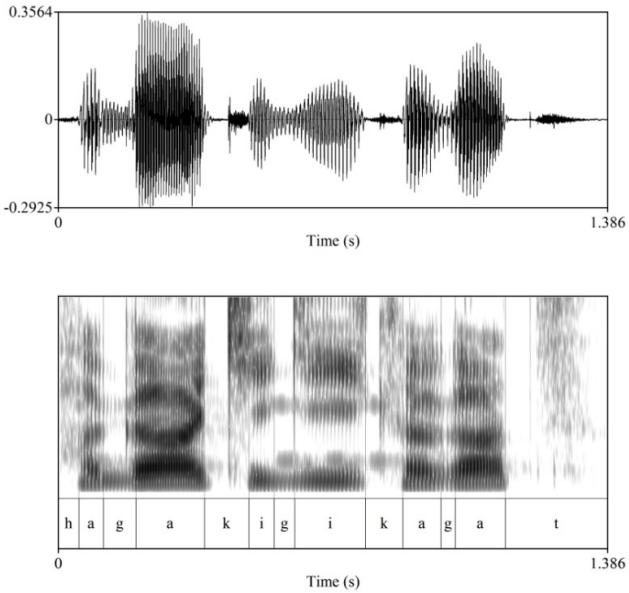

Fig. 9 Waveform and spectrogram of the *-gV* ludling version of example (32) (#1)

I measured the duration of the long vowels in the source and *-gV* syllables from Figure 9. See Table 3.

Table 3 Duration of vowel in each syllable of (30) and (32)

Example	source (msec)	*-gV* (msec)
(30)	73.4	208.6
(32)	64.1	178.2

As shown in Table 3, the vowel in the *-gV* syllable is much longer than the long vowel in the input. It can be concluded from these observations that the vowel of a source syllable is shorter than the vowel of an inserted *-gV* syllable.

5. Discussion

From the observations in Section 4, I analyze that the output of the *-gV* ludling displays iambic feet. The prosodic structure of the examples in (23), (26), (28), (30), and (32) are given in (33), (34), (35), (36), and (37), respectively. The foot constituents are shown in parentheses. The strong syllables are indicated in boldface.

(33) (si.**gir**)(ke.**ge**)(ci.**gi**)

(34) (ge.**gel**)(di.**gin**)(ge.**gel**)(di.**gin**)

(35) (e.**gel**)(ma.**ga**)(la.**gar**)

(36) (a.**ga**:)(bi.**gi**)

(37) (ha.**ga**)(ki.**gi**)(ka.**ga**:**t**)

The left edge of the foot corresponds to the left edge of the source syllable. The vowels of source syllables are lower and shorter than the vowel of the *-gV* sequences. In conclusion, the output of the *-gV* ludling in Turkish displays iambic feet.

6. Conclusion

This paper described and analyzed the prosody of the *-gV* ludling in Turkish in terms of F_0 track and duration. It is concluded that the *-gV* ludling forms iambic feet, supporting the existence of iambic feet in Turkish. This finding is obtained only by investigating ludlings. This study suggests the possibility that ludlings can provide new evidence for natural language phenomena.

* This paper is an outcome of the Grammatical Studies Workshop "Language Games and Phonology," organized by ILCAA Core Project "Linguistic Dynamics Science 3."

Abbreviations

1	first person	NEG	negation
2	second person	PL	plural
ABL	ablative	PROG	progressive
ACC	accusative	POSS	possible
DAT	dative	PST	past
FUT	future	SG	singular

References

Barker, Chris. 1989. "Extrametricality, the cycle, and Turkish word stress". In Junko Ito and Jeff Runner (eds.) *Phonology at Santa Cruz* Volume 1. Santa Cruz: Syntax Research Center, University of California. pp.1–34.

Beckman, Mary E. 1986. *Stress and Non-Stress Accent*. Dordrecht: Foris Publications.

Charette, Monik. 2008. "The vital role of the trochaic foot in explaining Turkish word endings". *Lingua* 118 (1). pp.46–65.

Comrie, Bernard. 1997. "Turkish phonology". In Alan S. Kaye (ed.) *Phonology of Asia and Africa (Including the Caucasus)* Volume 1. Indiana: Eisenbrauns. pp. 883–898.

Davis, Stuart. 1993. "Language games". In Ronald E. Asher and James M. Y. Simpson (eds.) *Encyclopedia of Language and Linguistics*. Oxford: Pergamon Press. pp.1980–1985.

Inkelas, Sharon. 1999. “Exceptional stress-attracting suffixes in Turkish: Representations vs. the grammar”. In René Kager, Harry van der Hulst, and Wim Zonneveld (eds.) *The Prosody-Morphology Interface*. Cambridge: Cambridge University Press. pp.134–187.

Inkelas, Sharon and Cemil Orhan Orgun. 2003. “Turkish stress: A review”. *Phonology* 20(1). pp.139–161.

Kavak, Barış and Irene Vogel. 2001. “The phonological word and stress assignment in Turkish”. *Phonology* 18(3). pp.315–360.

Laycock, Don. 1972. “Towards a typology of ludlings, or play-languages”. *Linguistic Communications* 6. pp.61–113.

Lees, Robert B. 1997. *The Phonology of Modern Standard Turkish*. Richmond: Curzon.

Levi, Susannah V. 2005. “Acoustic correlates of lexical accent in Turkish”. *Journal of the International Phonetic Association* 35(1). pp.73–97.

Özçelik, Öner. 2014. “Prosodic faithfulness to foot edges: The case of Turkish stress”. *Phonology* 31(2). pp.229–269.

Sezer, Engin. 1981. “On non-final stress in Turkish”. *Journal of Turkish Studies* 5. pp.61–69.

Suzuki, Yui. 2019. “Torukogo ni okeru kakokei no hanpukugimukoobun” [The repetitive construction of the past tense form in Turkish]. *The 159th Meeting of the Linguistic Society of Japan*. Hitotsubashi University, Tokyo. June 22–23, 2019.

Şahin, Erdal. 2008. “Kuş dili”. In Emine G. Naskali and Erdal Şahin (eds.) *Kültür Tarihimizde Gizli Diller ve Şifreler*. Istanbul: Ka Kitap. pp.11–34.

Underhill, Robert. 1976. *Turkish Grammar*. Cambridge, MA: MIT Press.

———. 1986. “Turkish”. In Dan I. Slobin and Karl Zimmer (eds.) *Studies in Turkish Linguistics*. Amsterdam and Philadelphia: John Benjamins. pp.7–21.

Vaux, Bert. 2011. “Language games”. In John A. Goldsmith, Jason Riggle, and Alan C. L. Yu (eds.) *The Handbook of Phonological Theory*. Second edition. Malden, MA: Wiley-Blackwell. pp.722–750.

Yu, Alan C. L. 2008. “On iterative infixation”. In Charles B. Chang and Hannah J. Haynie (eds.) *Proceedings of the 26th West Coast Conference on Formal Linguistics*. Somerville, MA: Cascadilla Proceedings Project. pp.516–524.